

**Environmental Assessment**  
**For The**  
**West Eugene Wetlands Project**  
**Oxbow West Management Unit**

**OR 090-EA-02-20**

**September 2002**

Prepared by: /s/ Mark Stephen  
Mark Stephen  
Forest Ecologist  
Coast Range Resource Area

Date: 9/6/02

Reviewed by: /s/ Gary Hoppe  
Gary Hoppe  
Environmental Coordinator  
Coast Range Resource Area

Date: 9/5/02

**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
EUGENE DISTRICT OFFICE**

**WEST EUGENE WETLANDS PROJECT  
OXBOW WEST MANAGEMENT UNIT**

**ENVIRONMENTAL ASSESSMENT NO. ORO- 02-20**

**I. PURPOSE AND NEED FOR THE PROPOSED ACTION**

**A. BACKGROUND**

The West Eugene Wetlands (WEW) Project is a cooperative venture by the Eugene District, Bureau of Land Management (BLM), to protect and restore historic wetland ecosystems in the southern Willamette Valley of Oregon. This unique project involves federal, state, and local agencies and organizations in partnership to manage lands and resources in an urban area for multiple public benefits. Major partners in the WEW Project include the BLM, the City of Eugene, The Nature Conservancy, The Oregon Youth Conservation Corps, and The Army Corps of Engineers. The BLM became an active partner in 1993 when they adopted the WEW Plan (WEWP) (City of Eugene, 1992). The BLM has been involved with its partners in land acquisition, restoration, enhancement, and maintenance of approximately 2,500-3000 acres in the West Eugene area.

A variety of management activities for the WEW project area are recommended in the WEWP. In 1994, the BLM began limited management actions on various properties that included planning, research on special status species, prescribed burning, environmental education, trash removal, and noxious weed control. Public use of federal land within the WEW Project is currently allowed under the Code of Federal Regulations (43 CFR 8365.1-6). There is a need to coordinate these management actions and other planned activities within specific area boundaries.

**B. DESCRIPTION OF PROJECT AREA**

The Oxbow West site of the West Eugene Wetlands is located in Township 17 South, Range 4 West, Sections 29, 32, and 33 (see map, Attachment 1.) and is a 55-acre block of public land adjacent to a 2-acre parcel owned by the Oregon Department of Transportation (ODOT). These two parcels are proposed to be managed as a unit. The two parcels contain 51 acres of wetland, mostly wet prairie, with small patches of forested, scrub-shrub and emergent wetland scattered across the site. The remaining 6 acres is classified as upland, either naturally-occurring or as a result of past fill activities. Upland patches primarily exist near the site boundaries.

The site was used for pasture and hay production until the early to mid 1990's. Following public acquisition, the site was largely undisturbed. As a result, woody vegetation, once confined to the edges of the site, has begun to spread across the interior of the site into the wet prairie. Much of the surrounding area is commercial/industrial interspersed with public land that is managed as the West Eugene Wetlands.

The Fern Ridge Bike Path will be extended along the Amazon Channel levee which lies along the east property boundary of Oxbow West. Construction is planned for 2002 and 2003. Details can be found on file with the City of Eugene Planning Department.

### **C. CONFORMANCE WITH THE LAND USE PLAN**

The Bureau of Land Management, Eugene District, officially adopted the West Eugene Wetlands Special Area Study Plan as the land management plan for those lands acquired with Land and Water Conservation Funds for the West Eugene Wetlands Project on March 23, 1993. This plan was revised and formal adoption of the Revised West Eugene Wetlands Plan occurred on September 17, 2001 (City of Eugene, 2000). The proposed action is consistent with the adopted plan.

### **D. RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS**

The proposed action complies with the Eugene District Record of Decision and Resource Management Plan (United States Bureau of Land Management 1995).

### **E. PURPOSE AND NEED**

Vegetation succession to a forested and scrub-shrub site dominated by trees and shrubs of hawthorne, Himalayan blackberry, and ash trees is presently occurring on the Oxbow West site resulting in the loss of a remnant wet prairie, and in an increase in forested acreage in the south Willamette Valley. Exotic and invasive species such as reed canary grass, pennyroyal, and teasel are continuing to spread through the native prairie communities, and it is expected that they would out-compete many of the native herbaceous species prior to woody succession. The purpose of the actions is to restore and enhance wetland prairie habitat within the Oxbow West site of the West Eugene Wetlands and to monitor, protect and enhance rare species that are present.

### **F. ISSUES**

The potential issues or concerns identified relative to completion of the project work included the following:

1. Disturbance to federally listed Threatened and Endangered (T&E) Species and Species of Concern and their habitat while trying to achieve wetland and T&E restoration and enhancement.
2. Maintaining the integrity of the soil and hydrologic resources of the site while trying to achieve wetland restoration and enhancement.

## **II. PROPOSED ACTION AND ALTERNATIVES**

### **A. PROPOSED ACTION AND DESIGN FEATURES (ALTERNATIVE A)**

The Proposed Action would implement a variety of land management activities at Oxbow West with an emphasis on wet prairie enhancement and rare species monitoring, protection, and enhancement. The associated uplands would be managed to complement the wet prairie, and enhance native upland plant communities. Trash removal would occur as necessary, and is expected to occur mostly along the bike path.

## WETLAND RESTORATION AND ENHANCEMENT

It is anticipated that some of these land management activities will be completed in five years and others will continue into the future as needed to control invasive species and enhance habitat. Management activities will routinely be re-evaluated and adapted to meet management goals as needed. Activities likely to occur on the ODOT parcel will be discussed solely in the context of how those actions will relate to the proposed BLM activities. Actual implementation of specific actions would be dependent on available funding and staff time.

### **Vegetation Management**

The majority of the management actions would focus on wetland enhancement. Removal of invasive woody species such as Douglas' hawthorne (*Crataegus douglasii*), Himalayan blackberry (*Rubus discolor*), and female ash trees (*Fraxinus latifolia*) from areas where they are encroaching on native prairie communities, as well as control and removal of invasive herbaceous species such as reed canary grass (*Phalaris arundinaceae*), pennyroyal (*Mentha pulegium*), and teasel (*Dipsacus fullonum*), would occur using mechanical means including chainsaws, weed whackers and other hand tools, mowing, prescribed burning, soil scraping, and solarization. All areas receiving mechanical or other vegetation management treatments would be seeded or planted with native species where invasive species were removed.

Precautionary measures would be taken to lessen potential short term impacts to T&E species and species of concern that may be present. Pre-project surveys for listed (T&E) species and species of concern would occur prior to project implementation and projects would be timed to reduce potential impacts to these species (Design Features 1 and 2).

### Prescribed Burning

The parcel would be burned to enhance native plant populations on an interval of 2-3 years. The burns would be of short duration with no more than 15 acres being burned at one time, and would burn only a portion of a particular listed or rare species' population at a time. Ignition of burning would be by hand using propane, fusees, or drip torches. Fire control/suppression would be accomplished with the use of pre-burn hose lays, wet-lining, and fire retardant foam.

An area approximately 10-20' wide would be mowed around the outside boundary of the prairie area to assure fire control. Prescribed burns would be conducted in a manner consistent with state and local smoke management regulations. Burns would occur in August, September, or October, when the clay soils of the grassland are dry, hard, and can support fire-fighting vehicles without damage to the soils. The sites adjacent to the planned burning area would be protected by wetting down the areas adjacent to the perimeter of the burn. If necessary, fire vehicles would enter the site via the end of Terry Road on the south end of the site, and would operate from the west side of the existing north-south ditch without running over listed species. Vehicles would not be operated in the areas of listed species. Human movement in areas of listed species would be managed to minimize impacts to listed species.

### Solarization

Solarization is the removal of monotypic weed patches by tilling, then covering a small area with plastic during the growing season. Elevated temperatures kill most of the target species. Solarization areas would be about 0.1 of an acre or less in size per treatment area. Size of the solarization treatment areas would be dictated by the noxious weeds' infestation patterns. Solarization would not be used where listed species occur.

### Soil Scraping

Soil scraping would require scraping and removal of organic soil within the proposed excavation area to control blackberry, scotch broom, teasel, and reed canary grass where it has formed a dense monoculture. This action would occur at the southeast end of the Oxbow West site on approximately a quarter-acre area within the recontouring and excavation area.

### **Hydrology Control Structures**

Two control structures would be installed along the Amazon Channel to allow for regulation of surface flow if needed. These structures would facilitate invasive species control by allowing access to infested areas with small equipment or for solarization, and they would also ensure that water levels could be adjusted if sheet flows increase and become detrimental to native plant communities when full build-out occurs on the privately-owned parcel adjacent to the west of the site.

### **Recontouring/Excavation**

Contour adjustment, excavation, and fill removal, would occur on approximately a third of an acre at the extreme southeast end of the site, where fill was placed during the construction of Terry Street. This fill material is contributing to invasive species problems at the south end of the site. The slope adjacent to Terry Street would be lowered and made more gradual, which would also facilitate the planting of native species and provide a more effective buffer against weed sources instead of contributing to them on the site. Material would be removed using an excavator working off of the levee, off of the small fill area at the levee gate, or off of the street, and would be loaded into trucks for disposal at a previously approved, non-wetland disposal site.

In addition, an existing north-south ditch located at the southwest portion of the site would be converted into a shallow swale. Its purpose would not change; it would drain high flows to the south end of the site and into the Amazon Channel. The drainage is necessary to intercept increased stormwater flows once the adjacent property to the west achieves full build-out (sheet flow is from west to east in this area.) Conversion would require lowering the slope of the ditch banks by using an excavator, but not lowering the bottom elevation of the ditch. Work would occur starting at the north end of the ditch and working back toward Terry Street. Work windows would correspond with United States Fish and Wildlife's (USFWS) requirements for listed species on the Oxbow West site.

## **DESIGN FEATURES OF THE PROPOSED ACTION**

The following design features would be incorporated into the project:

1.) Wildlife and botanical surveys / listed species - Botanical and wildlife surveys would occur in the work areas prior to work occurring.

- ▶ Any area with listed species or species of concern would be flagged and crews instructed to avoid these areas during work. (Vehicles would not be operated in the areas of listed species. Human movement in areas of listed species would be managed to minimize impacts to listed species.)

- ▶ Surveys for western pond turtles and their nests would occur within and adjacent to the proposed excavation / earthwork areas. Any nest sites found would be protected during this project (either by exclosures or by removing eggs, hatching in captivity and releasing back to the wetlands).

2.) Project work windows / listed species: Project work windows would correspond with USFWS's requirements for listed species. Management actions for federally listed species would be coordinated with the USFWS through formal consultation.

- Potential negative impacts to listed plant species and plant species of concern would be avoided or reduced by timing enhancement and restoration activities during dormant or non-reproductive periods. Crews would be able to identify listed species in the field. Crews would be supervised during research and weeding activities by a botanist.

- All mechanical work including mowing would be timed to and designed to minimize harm to all life cycle stages of the Fender's blue butterfly (*Icaricia icarioides fenderi*). Work would occur after the annual breeding season has ceased (after July 15 of each growing season) and only a limited number of skilled workers would be allowed to work near larval areas to avoid trampling.

- Removal of trees and shrubs would be timed to reduce the chance of destroying occupied bird nests.

3.) Invertebrate and herptile cover - Woody debris would be left in areas to support invertebrate and herptile cover.

4.) Prescribed burning - Prescribed burning would occur after plants have set seed and after the butterfly breeding season is over. All burning would comply with local and county burn ordinances and would be timed to achieve smoke management requirements. Planned burn treatment areas would be limited to 15 acres per burn event and only a portion of the habitat for listed species would be burned at any one time. Burns would occur in intervals of 2-3 years in August, September, or October. (Vehicles would not operate in areas of listed species and human movement in areas of listed species would be managed to minimize impacts to these species.)

5.) Native seeding and planting - Native plants would be seeded or planted post-treatment to both encourage establishment of native vegetation within the project site and to discourage potential spread and establishment of exotic and invasive woody and herbaceous species.

6.) Soils - Soil compaction would be avoided by having equipment travel on areas within the excavation footprint, prior to excavation. No excavation would occur in areas where the historic soil profile is intact. Native seeding and planting would occur prior to the start of the rainy season (October) and jute matting would be placed in areas where more than minor erosion appears possible to limit the amount of erosion that may occur. Excavation work would occur during the mid-late summer dry season to avoid compaction. Use of low ground pressure equipment would be required to minimize compaction. Monitoring of soils during soil scraping and excavation to remove fill would be required to minimize the disturbance and loss of the organic soil layer. Excavated fill material would be transported off-site and disposed of in accordance with the United States Environmental Protection Agency and Oregon Department of Environmental Quality laws and regulations. On site erosion and potential for sediment delivery to waterways from excavation sites would be minimized by use of sediment control structures (i.e. native or sterile straw bales, silt fencing).

7.) Water quality protection - Work would not occur during water runoff periods to maintain water quality.

8.) Hazardous materials - Excavation work would occur during the mid-late summer dry season when drainage ways on the site are not holding water. Spill containment kits would be available in the event of a spill, and removal, transport, and disposal would be done in accordance with the U.S. Environmental Protection Agency and Oregon Department of Environmental Quality laws and regulations.

9.) Historic and archeological requirements - No excavation would occur in areas where the historic soil profile is intact. In the event paleontological remains or archaeological specimens are uncovered or found within the project they would be considered the property of the Bureau of Land Management and would be removed only by the Bureau of Land Management or designated representatives. The Contracting Officer (CO) would be notified within one hour of discovery. The CO would notify the Eugene district archaeologist, or the Oregon State Office (SO) archaeologist if the District archaeologist is unavailable, within one working day of being notified that paleontological or archaeological materials have been discovered.

10.) Noxious weed spread - To prevent the spread of noxious weeds and nonnative plants, all heavy equipment would be cleaned to remove mud, debris, and vegetation material prior to arriving at the project site. Heavy equipment means any equipment that has the capacity to disturb or compact soils or waterway channels, e.g., backhoes, bulldozers, cranes, and trucks.

#### **B. NO ACTION ALTERNATIVE (ALTERNATIVE B)**

Under this alternative, no enhancement or restoration work would occur.

#### **C. SITE MANAGEMENT WITHOUT BURNING (ALTERNATIVE C)**

Alternative C would implement the same land management activities as Alternative A at Oxbow West, with an emphasis on wet prairie enhancement and rare species monitoring, protection, and enhancement (Attachment 2.) Prescribed burning would be eliminated as a management tool under Alternative C. The associated uplands would be managed to complement the wet prairie, and enhance native upland plant communities. Trash removal would occur as necessary, and is expected to occur mostly along the bike path.

### **III. AFFECTED ENVIRONMENT**

#### **GEOLOGY**

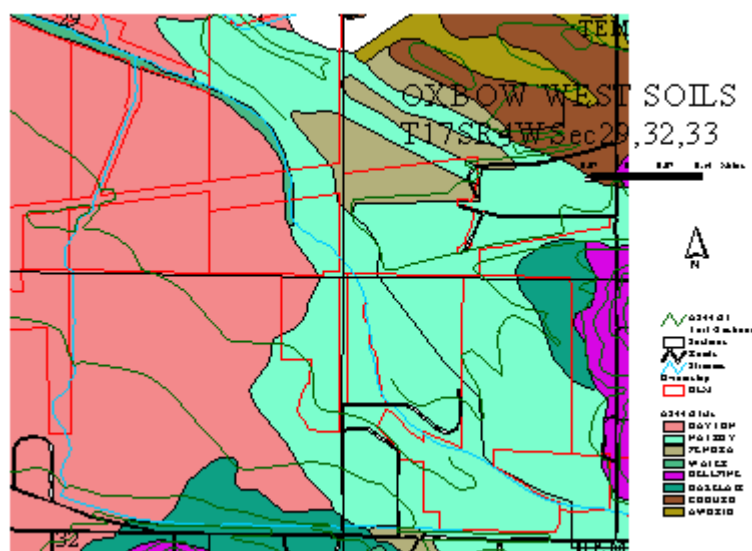
Average elevation of the Oxbow West site is approximately 385 feet above sea level and is located on the west bank of Amazon Creek approximately one half mile downstream of the mouth of Willow Creek. This area is geologically mapped as lacustrine and fluvial sedimentary rocks (Qs) (Walker and Macleod, 1991) and older alluvium by the U.S.G.S. (1973) noting that younger deposits exist in the southern Willamette Valley along the Long Tom River and smaller streams. The surficial floodplain sediments include sand, silt and clays derived predominantly from pyroclastic volcanism (basalts) in the ancestral Cascade Range and includes erosion from the sedimentary Coast Range.

During the late Eocene and early Oligocene, 40 million years ago, a shallow marine basin, known as the Willamette Trough, existed proximally in what is the Willamette Valley today. The Spencer Formation (Ts) and the Eugene/Fisher Formation (Tfe) were laid down during this time. The Spencer Formation is derived from an ancestral Coast Range sedimentary rock and outcrops have been identified within the West Eugene Wetlands. The Spencer Formation was identified in the hillslope during the excavation of the Hyundai building site located in the headwaters draining into the Willow Creek and Amazon Creek

watershed (Retallack, personal communication, 2001). The Eugene Formation was laid down in the marine environment of the Willamette Trough and is considered to underlie many of the alluvial deposits of the southern Willamette Valley near Oxbow West. (Schenck, 1927; U.S.G.S., 1973). Local outcrops on the valley floor such as Wallace Butte have been identified and mapped as Eugene Formation. The Fisher Formation is considered non-marine, but fluvial aspects do appear, particularly where the unit interfingers with the marine Eugene Formation. Along with intrusive basalts such as those on Spencer Butte, the Eugene/Fisher Formation lies in the headwaters of streams flowing through the southern Willamette Valley.

## SOILS

Soil series mapped by the Soil Conservation Service (SCS) at this location include Dayton and Natroy (Figure 1). Both soils are considered hydric according to hydric criteria and NRCS revised Hydric Soils Lists. The Dayton soil is characteristic of the Fine, montmorillonitic, mesic Typic Albaqualfs (alfisols) and the Natroy soil is considered to be part of the Very-fine, montmorillonitic, mesic Aquic Chromoxererts (vertisols). The general location of the Oxbow West site includes landforms that are typical of the flat floodplain prairie wetlands that predominate the area. The area has soils that are located on the Winkle geomorphic surface (Baitis, unpublished; Toepel, 1985). On the basis of radiocarbon dates, the Winkle Unit ceased to be an active floodplain of the Willamette River between 5250 and 3300 years ago (Balster and Parsons, 1968; Toepel, 1985).



**FIGURE 1.** Soils mapped by the Soil Conservation Service (SCS) 1987. U.S.D.A. Lane County Soil Survey.

The Dayton soil has a shallow A horizon. It is found throughout the Willamette Valley and is described similarly throughout Lane, Linn, Marion, Poke and Yamhill Counties (SCS, 1972; SCS, 1974; SCS, 1982; SCS, 1987; SCS, 1987). In Lane County the Dayton series is associated with the Awbrig, Bashaw, Conser, Courtney, Holcomb, Linslaw, Natroy, Noti and Pengra soils. The SCS soil surveys state that the Dayton series is “deep, poorly drained” in drainageways on broad stream terraces, however all the SCS surveys describe soil development as only 13 to 16 inches deep with a gray clay subsoil (IIB2t).



Natroy soils have not been described anywhere but in Lane County (SCS, 1972; SCS, 1974; SCS, 1982; SCS, 1987; SCS, 1987). The Natroy soil is mapped along the floodplains of tributaries flowing from Spencer Butte in areas prone to erosion and deposition. The Natroy soil has an A horizon typically 24 inches deep. It is described as “deep, poorly drained” located on terraces and fans, however, the SCS soil description indicates that the C horizon (a dark clay) immediately follows the A horizon at 24 inches indicating that soil development is not very deep.

It is the organic soil layer, that holds and provides the nutrients and microbes required for plant growth and helps prevents the subsoil from drying out quickly. The clay layer is a separate stratigraphic unit that would not readily support plant growth.

Several soil samples were taken at Oxbow West in March 2002. In much of the unit, there is a massive gray clay underlying a shallow surface organic layer. There are several different types of soils present and some have been impacted from the placement of fill including the areas of the channelization of Amazon Creek, the road extension of Terry Street, and the access road to PSC. There appear to be soil inclusions throughout the site, where except for an organic mat, the gray clay is located shallow to the surface (Photo 1). These areas are typified by vertical puff structures (Photo 2) that may reflect clay heave. Most of the puffs rise three or four inches above the surrounding surface creating an uneven humpy surface. Some of the subangular blocky peds rise as much as eighteen inches high above the surrounding surface. These mounds are vegetated and it appears they were created by ants as most of the blocks are occupied anthills (Photo 3). This humpy microtopography of pattered ground can be somewhat symmetrical and it is associated with soils that are rich in clay and influenced by cycles of seasonal wet and dry periods. One theory of formation is that as the clay dries and cracks, the upper soil materials and organics crumble off edges and fall into the lower portion of the cracks. This is repeated at each successive rainfall, and the crevices fill with surface soil. As continuous rains saturate the clay, the crevices expand and the cracks cannot close because of the surplus materials that have fallen into them. The result is that the soil ped is compelled to bulge upwards creating the humpy surface. In the southwestern United States these areas are known as “hog-wallows” (Paton, 1974).

Another theory is that these areas resulted from ground disturbance from animals. Land-use in the West Eugene Wetland area included cattle grazing and the resultant hummocky micro-topography on this site bears similarities to pastures that have had cattle on them during wet weather.



**Photo 1.** Illustration of the shallow organic mat overlying gray clay in the Oxbow West site. The shovel is 18 inches long from tip to base.



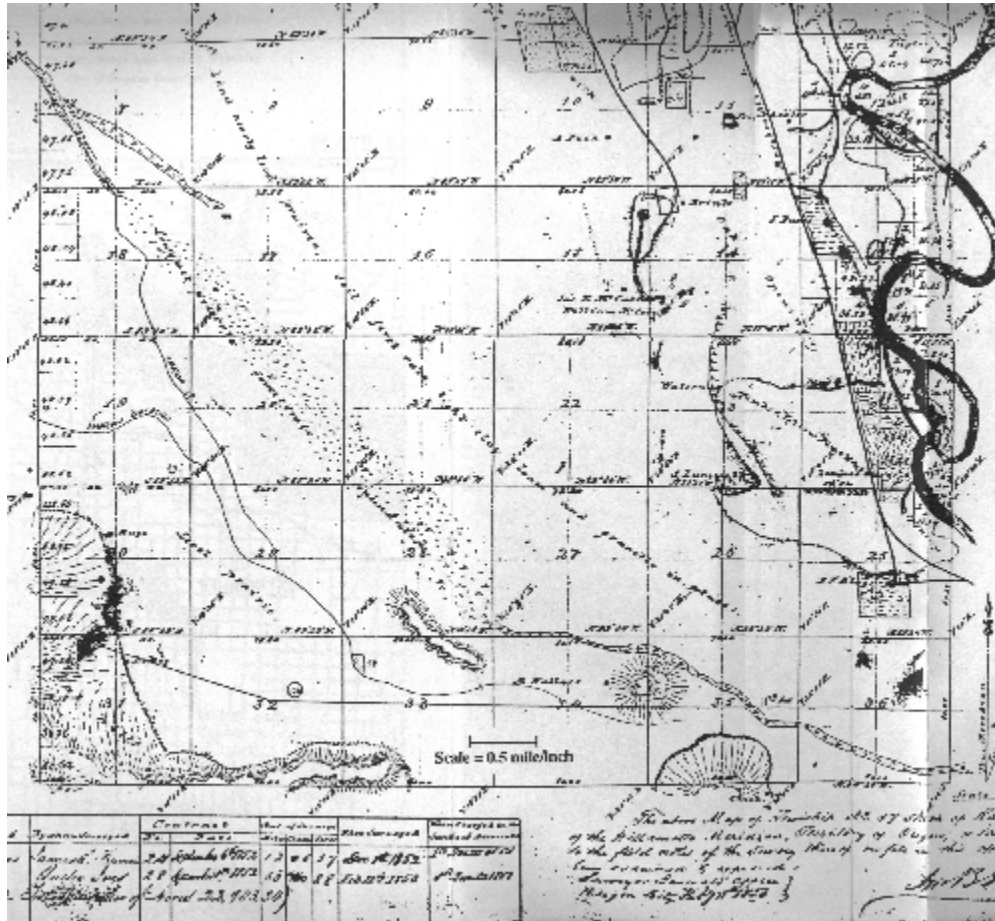
**Photo 2.** Uneven humpy microrelief is typical of the west Eugene wetlands. This photo illustrates that the gray clay is located on the surface of the floodplain. The land here has been leveled and farmed and it is possible that the leveling removed the topsoil to expose the clay.



**Photo 3.** Ants take advantage of the uneven humpy microtopography and built anthills that rise as much as two feet off the surface of the west Eugene wetlands. The mounds keep them dry during the winter when water becomes ponded over much of the area.

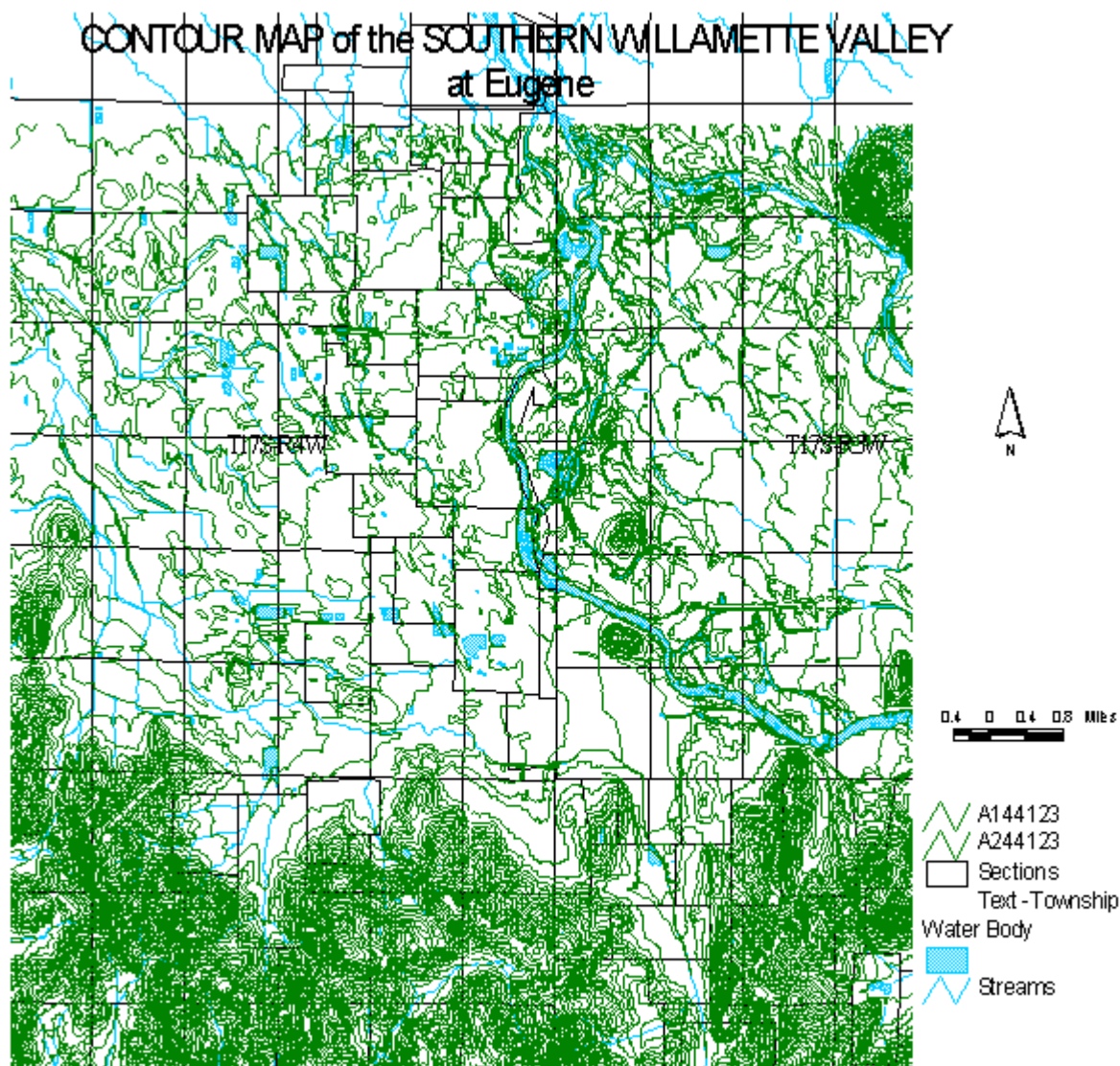
### **HISTORIC HYDROLOGY**

It appears from historic mapping that the Oxbow West site received drainage flowing from Willow Creek and that Amazon Creek was not connected to this part of the floodplain prehistorically. Documentation indicates that hydrologic alteration of the area increased with encroaching Euroamerican occupation. The 1853 General Land Office (GLO) Map (Figure 2) and the 1911 City of Eugene Engineers Map indicate that a multiple-channel drainage pattern existed in the southwestern part of the valley. The 1850s GLO map indicates that much of Amazon Creek did not look like a “real stream” (Alverson, 1993). Only a 3-mile reach is mapped as a single stream unit from the Eugene County Fairgrounds to the lower end of Bertelsen Slough. Willow Creek is also not mapped as a single channel. With the growth of the City of Eugene, channel improvements were needed to reduce flooding from overbank flows and in the early 1950s, a single deep channel was constructed to hold the flow of Amazon Creek and Willow Creek, routing the Amazon Creek channel into the historic Willow Creek drainage area. Photographs exist from the 1940s that show that Amazon Creek was a relatively shallow channel that flooded across the western valley into multiple braids. Although Amazon Creek would at times probably occupy abandoned channels cut by the Willamette River, it can be assumed that Amazon Creek flowed across the floodplain distributing its flow widely during high flows. The Amazon Creek diversion channel was constructed or designed to divert floodwaters from Amazon Creek into Fern Ridge Dam to reduce downstream flooding. The diversion channel aids in moving water rapidly through and out of the floodplain.



**Figure 2.** 1852 General Land Office survey map displaying the 1852 descriptions of the valley floor. The current location of Amazon Creek and the Amazon Diversion channel starting in Section 35 has been added to the map to illustrate its current position.

With urban encroachment, railroads and riprap, the Willamette River has been cut off from its prehistoric floodplain. Contour maps show the trajectory of the Willamette River into the western part of the valley (Figure 3). There is evidence that channel lag deposits from the Willamette River exist along T17S, R04W, Sections 27, 28, and 40, along Bertlesen and Teal Sloughs and a gravel pit is mapped on the West Eugene 7.5' Quadrangle, in Section 28. It is noteworthy that the GLO survey notes mention that the western part of the valley was described as “inundated from 1 to 3 feet deep by the Willamette River” at high water (Toepel, 1985).



**FIGURE 3.** Contour map of the southern Willamette Valley displaying the historic influence of the Willamette River on the western side of the valley.

### MODERN HYDROLOGY

The regional water table can be found approximately ten feet below the surface of the West Eugene Wetlands. Ground water contours have been mapped and they display that a trough exists in the Amazon Creek area of west Eugene. The mapping indicates that today Amazon Creek is connected to the regional water table and is recharged and directly related to this ground water level (Frank, 1973). Although the regional ground water in west Eugene has less direct relationship to wetland delineation than the shallow ground water storage, it is evident that hydrology of the area has been altered substantially with Euroamerican settlement and urbanization. Another alteration to the water levels in Amazon Creek was the construction of Fern Ridge Dam. The Amazon diversion channel flows into the dam. The Army Corps of Engineers (ACOE) regulates the water in the dam and during the summer



when the dam is full, the Amazon diversion channel has flows that back up visibly related to the water level of the dam.

Air photos of the Oxbow West site in 1936, 1952, 1968, and 1977 display the succession of change during the twentieth century. By 1936, the Oxbow West site had experienced the construction of a railroad, agricultural plowing and shaping of the fields with shallow surface drainage ditches (a typical drainage technique to drain the shallow depth soils that have low permeability and clay layers). Many fields were leveled in the 1930s to accommodate large farm equipment for field crops. The 1936 photo shows the channel of Willow Creek passing through Oxbow West. In the 1952 air photo, Dead Cow Creek has been straightened and levees have been added to each side. By 1968, Amazon Creek occupied the current channel position adjacent to Oxbow West. The Willow Creek channel became the main channel for Amazon Creek and the channel was straightened and levees placed on either side.

Direct precipitation is the main input of water for maintaining the wetland characteristics of the soils. The water percolates into the ground and is stored in cracks, fissures and pores. A clay subsoil layer is found in much of the area and the water percolating downward from the soil surface is intercepted and a zone of saturation is created. This leads to a perched water table that is formed seasonally with standing water for a certain length of time during the growing season. The water creates an oxygen deficiency that favors hydrophytic plant species and prevents the establishment of species that are not tolerant of saturated soils. It is important to maintain the water for a certain length of time during the growing season for optimal hydrologic conditions for the wetland species, however, how much water for how long isn't known. What is known is that the absence or presence, periodicity, and duration in inundation are important in wetland delineation. How interconnected the regional groundwater table is with the clay layers is not known. It is evident that the extent and timing of inundation of water has been altered through ditching and the channelization of Willow Creek and Amazon Creek.

## **VEGETATION**

Herbaceous plant species which are present on the site include native forbs such as Hall's aster (*Aster hallii*), common camas (*Camassia quamash*), slim-leaf onion (*Allium amplexans*), and cut-leaf microseris (*Microseris laciniata*), and grasses such as tufted hairgrass (*Deschampsia cespitosa*), spike bentgrass (*Agrostis exarata*) and Western panicum (*Panicum occidentale*). Dominant woody species include Douglas' hawthorne (*Craetagus douglasii*), Himalayan blackberry (*Rubus discolor*), and ash (*Fraxinus latifolia*). Exotic species such as reed canary grass (*Phalaris arundinaceae*), teasel (*Dipsacus fullonum*), Himalayan blackberry (*Rubus discolor*), and pennyroyal (*Mentha pulegium*) are found primarily near the site boundaries but have begun to spread into the interior wet prairie. They dominate in those areas that they have colonized on the site.

## **BOTANY-SPECIAL STATUS SPECIES**

The proposed project area has had complete surveys for all T&E plants (Salix and Associates, 1996 and 1997; Weber, 1998). The Fender's blue butterfly is addressed within the botany discussion due to its close association with Kincaid's lupine (*Lupinus sulphureus* var. *kincaidii*).

### Federally Listed Species

Species found within Oxbow West include the federally-listed as threatened Kincaid's lupine and the federally-listed as endangered species, Willamette daisy (*Erigeron decumbens* var. *decumbens*) and Fender's blue butterfly.

An historic population of federally-listed as endangered Bradshaw's lomatium (*Lomatium bradshawii*) has been reported for this area, but rare plant surveys of this site in 1998 did not document the presence

of Bradshaw's lomatium (Oxbow West- Weber, 1998). Repeated botanical surveys in the vicinity have not resulted in documented presence of this species in the areas that would potentially be impacted.

#### Species of Concern

Other plant species of concern include white top aster (*Aster curtus*), Cusick's checker-mallow (*Sidalcea cusickii*), and shaggy horkelia (*Horkelia congesta*) which are listed through the Oregon Natural Heritage Program.

#### Oxbow West Monitoring

Kincaid's lupine and Willamette daisy have received extensive baseline monitoring (Kaye, 1999, 2000, and 2001). A 1998 census documented the presence of white top aster (Interagency Conservation Strategy, 2000). In addition, eggs of the Fender's blue butterfly have been documented to occur on the leaves of this population of Kincaid's lupine.

The Oxbow West site has been monitored for both lupine and butterfly densities annually since 1999, and monitoring is anticipated to continue in the future. The three years of sampling indicates a stable to increasing butterfly habitat (lupine plants) and an increased but variable butterfly population based on egg count (Kaye, 1999, 2000, 2001).

Monitoring to document plant species and species abundance will occur during restoration activities and is planned to continue for a period of about 3-5 years after initial restoration activities are completed.

#### Past Management Activities

The occupied habitat for Kincaid's lupine is moderately degraded with respect to native vegetation as a result of prior agricultural disturbance and infestation by exotic grasses and shrubs. However, it retains native components that may form the basis for site restoration and is being actively managed at this time. Restoration of this and adjacent sites to improve habitat for Kincaid's lupine and Fender's blue butterfly may contribute to the recovery of these species in the southern Willamette Valley.

The project area does have infestations of noxious weeds and nonnative species including reed canary grass and nonnative, invasive blackberry. Past management has included removal or reduction of noxious weeds and encroaching woody species. Maintenance activities have included mowing and hand removal. The dramatic increase in butterfly egg abundance is thought to be the result of 1999 BLM habitat enhancement activities, primarily removal of trees and shrubs from lupine habitat. Other butterfly habitat enhancement projects underway near the Oxbow West project area include augmenting adult and larval resources with transplants of appropriate nectar species and Kincaid's lupine.

Management activities would continue to focus on protection, enhancement and monitoring of the threatened and endangered species and species of concern addressed above. Management actions for federally-listed species will be coordinated with the USFWS through formal consultation.

#### **WILDLIFE**

No formal wildlife surveys have been conducted at Oxbow West, but species which are present in the area and have either been observed on the site, or are expected to be present include: Townsend's vole, little brown myotis, raccoon, skunk, opossum, mustelids, black-tail deer, red fox, gray squirrel, nutria, neotropical migratory birds, raptors such as northern harriers and red tail hawks, reptiles such as common and Northwestern garter snakes and alligator lizards, and amphibians such as long-toed salamanders and chorus frogs.

It is unlikely that Western pond turtles would use the interior of the Oxbow West site because of the lack of ponded water present (they have been documented using the Amazon Channel adjacent to the site.) The site is also heavily vegetated and does not appear to contain suitable nesting areas for the turtle. They may, however, use the adjacent Amazon Channel banks and levee for basking, although there have been no recent reported observations.

Invertebrates include native and non-native bees, a variety of ground beetles, arachnids, and others commonly associated with prairie and wooded systems.

One listed invertebrate species, the endangered Fenders blue butterfly, has been observed on the site. No formal surveys of adults have been conducted, so there is no estimate of the number of adult butterflies which the site currently supports. However, three years of sampling indicates a stable to increasing butterfly habitat (lupine plants) and an increased but variable butterfly population based on egg count (Kaye, 1999, 2000, 2001). Because the population of Kincaid's lupine, the butterfly's larval host plant, is small on the site, Fender's blue butterfly numbers are also likely to be small.

#### **AIR QUALITY / FUELS**

The project area is within the urban growth boundary of the City of Eugene, and must comply with the conditions and equipment requirements set forth by in the "Open Burning Letter Permit" issued by the Lane Regional Air Pollution Authority and the "Short Term Burn Permit" issued by the City of Eugene, Office of the Fire Marshal. The site has fine fuels of approximately 1 to 1.5 tons per acre.

#### **RECREATION**

The Oxbow West unit is scheduled to have the Eugene bicycle trail constructed along its eastern border during the summer of 2002. This trail extension was analyzed under a previous NEPA action (OR-090-01-8) and a Record of Decision (ROD) for this extension was signed in June 2001. Once this extension is built, recreational use of bicycling, walking, running, and wildlife viewing will occur on this trail. While the unit is basically removed from the commercial district, the northern section is bordered by an active railroad. Recreation is of a dispersed nature and few visitors come to the site. The unit is currently being managed for botany and soil research and as a consequence, visitors have not been encouraged to use the area. Off highway vehicle (OHV) activity is strictly prohibited on any wetland lands.

### **IV. ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED ACTION**

#### **A. UNAFFECTED RESOURCES**

The following resources are either not present or would not be affected by any of the alternatives: Areas of Critical Environmental Concern, prime or unique farmlands, Native American religious concerns, cultural resources, water quality (ground and surface water), solid or hazardous wastes, Wild and Scenic Rivers, wilderness, environmental justice (minority or low income populations).

#### **B. AFFECTED RESOURCES**

##### **SOILS**

##### Soil Compaction/Site Productivity: Soil Fertility/Plant Available Water

Soil scraping to eliminate reed canary grass, blackberry, Scotch broom, and teasel would remove an unknown amount of the organic soil layer from approximately a quarter of an acre resulting in an irretrievable loss of soils.

Excavation and removal of fill material could result in disturbance to the underlying, organic soil layer and could result in an irretrievable loss of the organic soil layer exposing the lower clay layer. This clay layer is a separate stratigraphic unit that would not readily support plant growth. It is the organic soil layer, that holds and provides the nutrients and microbes required for plant growth and helps prevents the subsoil from drying out quickly. All effects of the removal of the organic layer are not known.

The West Eugene Wetlands have been historically impacted through urbanization. The hydrologic regime and subsequent erosional and depositional sequences that are part of the dynamics of a natural floodplain, are no longer available for the natural rejuvenation of the floodplain surface with new alluvial sediments. Once the remaining alluvial soils in the wetland area are removed, there would be little to no possibility for the natural rejuvenation of the floodplain surface with new alluvial sediment.

Wetland soils have a high clay content and these soils are easily compacted. The Dayton soil has a clay content of 40 to 60 percent and the Natroy has a clay content of 40 to 65 percent (SCS, 1987). Soil compaction related to heavy equipment use could potentially occur with Alternative 1. Design features have been included to reduce or minimize the potential for soil compaction to occur.

There are some known direct effects of burning on shallow soils such as loss of organic matter and nitrogen. Fire intensity tends to be light because fire residence time is brief in grasslands, however, more intense burns may affect the soil organism populations. The effects of more intense burns would include 1.) removal or decrease in protection of soil by litter, 2.) volatilization of large amounts of certain plant nutrients (mainly nitrogen and sulfur), 3.) transformation of less volatile plant nutrients to soluble mineral form that are easily absorbed by plants or lost by leaching, and 4.) heating the soil, thus altering its physical, chemical, and biological properties.

#### Sedimentation

Surface erosion from disturbed soils is anticipated during winter when overland flow occurs during and immediately following any soil disturbance activities and could potentially exceed the 10 percent of background turbidity standards set by the Oregon Department of Environmental Quality (DEQ). Design features have been included in the proposed action and alternatives to reduce the probability of fine sediment being routed into ditchlines and creeks. Design features would include use of jute matting in high erosion potential areas, use of sediment control structures (i.e. native or sterile straw bales, silt fencing), and immediate seeding bare ground to revegetate disturbed areas to minimize or prevent surface erosion and sedimentation.

#### Cumulative Effects

Soil scraping/removal would lead to irretrievably lost floodplain sediments and a loss of nutrient value especially if repeated to accomplish non-native vegetation removal. Heavy equipment operation may lead to soil compaction and a loss in soil productivity. Overland flow occurs seasonally throughout the wetlands and disturbing the floodplain soils could lead to surface erosion, and an increase in turbidity impacting the water quality of Amazon Creek. Design features have been included in the proposed action and alternatives to reduce these potential cumulative affects. Cumulative effects of prescribed burning of the prairie wetland soils are unknown.

### **HYDROLOGY**

Once converted to a shallow swale, the existing north-south ditch located at the southwest portion of the site would intercept and drain projected increased stormwater flows to the south end of the site and into the Amazon Channel. The two water control structures to be installed along the Amazon Channel would



regulate surface flow if it becomes detrimental to native plant communities when commercial development occurs on the privately-owned parcel adjacent to the west of the site.

#### Water Quality

Overland flow occurs seasonally throughout the wetlands and disturbing the floodplain soils could potentially lead to surface erosion and an increase in turbidity exceeding the ten percent of background turbidity standard set by DEQ, impacting the water quality of Amazon Creek. Design features have been included in the proposed action and alternatives to reduce these potential cumulative affects.

#### **VEGETATION**

Negative impacts are expected to be minor and short-term and include: damage to existing native species by equipment during excavation; trampling by crews during research and hand removal of exotic and invasive woody and herbaceous species; and, loss of native species during prescribed burns. It is anticipated that native plants will regenerate either from root stock (perennials) or from nearby seed sources (annuals and perennials). Revegetation with native species would be enhanced through seeding and planting with locally collected native plant sources.

Semi-annual mowing would be utilized with and without burning to maintain prairie habitat. Effects of mowing would contribute to control of invasive woody and herbaceous species by preventing or limiting seed dispersal. Mowing where listed plant species occur would be accomplished after listed species senesce or prior to their emergence.

Solarization would also contribute to a reduction in small monotypic patches of invasive species. Solarization areas would be about 0.1 of an acre or less in size per treatment area. Size of the solarization treatment areas would be dictated by the noxious weeds' infestation patterns. Solarization would not be used where listed species occur.

Positive impacts include control and removal of invasive woody and herbaceous species to protect and expand the existing native prairie communities; re-invigoration of prairie species (including rare and listed species) by fire; protection (or maintenance) of the hydrologic regime for native wetland and upland prairie species on the site through the use of water control structures; expansion of native species by seeding or planting; and adding to the knowledge base for rare and listed plant species through research and monitoring efforts. Control and removal of invasive species (is also expected to benefit adjacent sites and restoration areas downstream and downwind of Oxbow West by reducing the invasive plant seed sources onsite.

Recurring treatments are expected to be necessary on an on going basis to manage the invasive woody and herbaceous species present within the project area.

Excessive compaction and/or removal of the organic soil layer during the earthwork and excavation described above would limit subsequent introduction, growth and establishment of desired native plants into these areas. Design feature 6 of the Proposed Action addresses these concerns. Excavation work would occur during the mid-late summer dry season to avoid compaction. Use of low ground pressure equipment would be required to minimize compaction. Monitoring of soils during soil scraping and excavation to remove fill would be required to minimize the disturbance and loss of the organic soil layer.

## **BOTANY-SPECIAL STATUS SPECIES**

### Threatened or Endangered Plant Species

According to the Biological Assessment to be submitted to the USFWS, the Oxbow West restoration activities would have the following effects to federally listed plant species:

- ▶ The proposed action would “May Affect, Likely to Adversely Affect” the federally-listed as endangered Willamette daisy.
- ▶ The proposed action would “May Affect, Not Likely to Adversely Affect” the federally-listed as threatened Kincaid’s lupine.

### Mechanical Treatments and Prescribed Burning

There is likely to be little or no trampling of Willamette daisy and Kincaid’s lupine by crews during both research and hand removal of exotic and invasive woody and herbaceous species. Crew numbers would be limited and crews would be able to identify listed species in the field. Crews would be supervised during research and weeding activities by a botanist. Most weeding activities would occur before the plants have emerged or after they have senesced (Design feature 2).

Some mortality would be expected to Willamette daisy from prescribed burning. Research on controlled burning conducted from 1988-1991 at the U.S. Army Corps of Engineers’ Fisher Butte site in Lane County, Oregon showed that Willamette daisy had reduced flowering and plant heights in the first post-burn year, then recovered and increased its flower production and crown growth over unburned plants by the second post-burn year. While mortality was higher in burned plants in both 1989 and 1990, the post-burn density of vegetative plants was greatly increased in the burn patches relative to the unburned patches. This suggests that burning may have been beneficial to reproduction. The overall mortality of Willamette daisy was higher in unburned patches than in burned patches over the five year life of the project. Measurements of control plants varied during the study years, and therefore additional studies would help to determine if some of the research results were based solely on burning, or may have occurred due to variability in plant vigor (Connelly and Kauffman, 1991; Finley and Kaufman, 1992; Jackson, 1996.)

The Service issued a Conference Opinion on November 2, 1999 to the BLM for weed control activities and prescribed burning for Kincaid’s lupine and Fender’s blue butterfly for several sites including Oxbow West. They concluded that mowing, burning, and other weed removal activities that occur after the plants have senesced for the season would not result in adverse impacts (USFWS, 1999.) In addition, the effects of both prescribed burning and mowing on Kincaid’s lupine, spur lupine, and Fender’s blue butterfly were also studied as part of a larger research project conducted from 1994 -1997 at Baskett Slough National Wildlife Refuge in Benton County, Oregon. The findings indicated that Kincaid’s lupine plants were more vigorous with mowing or burning treatments than the control group, and that Fender’s blue butterfly egg abundance was 10-14 times higher in mowed or burned plots (Wilson and Clark, 1997.) Lupine burn areas resulted in 100% larval mortality for Fender’s blue butterfly, but the adult females from the unburned area were able to colonize all burned areas, including lupine in burn patches up to 107 meters from the unburned source patch (Wilson and Clark, 2000; Wilson presentation, 2002.) Monitoring of mowing (after Kincaid’s lupine becomes dormant) to control non-native woody species at the Fir Butte site has shown that Kincaid’s lupine leaf density increases in mowed plots and that Fender’s blue egg abundance is highly correlated to leaf density, and consequently has also increased in mowed plots (Kaye, 2002.)

### Recontouring / Excavation/Scraping

No negative impacts from heavy equipment are expected to existing federally listed species because excavation and scraping areas would not be near these plant populations.

### Species of Concern

Other plant species of concern include white top aster, Cusick's checker-mallow, and shaggy horkelia which are listed through the Oregon Natural Heritage Program. The mechanical, prescribed burning and excavation effects to these species would be similar to those described above for the federally-listed species.

### Invasive Non-Native Species

"Reintroduction of fire as a process is likely necessary for the recovery of remnant prairies and their rare plant populations. Many exotics have invaded the Willamette Valley prairies (Frenkel and Streatfeild 1994) and are often opportunistic and sometimes increase in response to disturbances such as fire (Harper 1977)" (Pendergrass 1995). Since the response of exotic species to burning is uncertain, native plants would be seeded or planted post-treatment to both encourage establishment of native vegetation within the project site and to discourage potential spread and establishment of exotic and invasive woody and herbaceous species (Design Feature 5). To prevent the spread of noxious weeds and nonnative plants, all heavy equipment would be cleaned to remove mud, debris, and vegetation material prior to arriving at the project site (Design Feature 9).

The expected long term effects of the proposed combined treatments (mechanical treatments, burning, mowing, solarization, and native seeding and planting) would include reduced competition from exotic and invasive woody and herbaceous species, and maintaining listed species habitat connectivity. By removing and controlling invasive non-native species such as reed canary grass, pennyroyal, Himalayan blackberry, and teasel, the overall seed base for these species would be reduced both onsite and in terms of offsite dispersal to other sites.

## **WILDLIFE**

The Proposed Action would cause negative short-term and long-term minor impacts during mechanical weed control efforts and prescribed burning. These impacts include crushing invertebrates, disrupting breeding and feeding behaviors of birds, small mammals, reptiles and amphibians, and mortality due to fire to those species unable to temporarily relocate during prescribed burning (terrestrial invertebrates, small mammal young.) Removal of herbaceous and woody vegetation may result in mortality of young birds, reptiles and amphibians, and would temporarily reduce nesting, feeding, and cover sites for all of the wildlife currently using the site (see III. Affected Environment, Wildlife section for likely species). Most displaced species would move out of the work areas and recolonize once native vegetation is planted and matures. Removal of trees and shrubs would be timed to reduce the chance of disturbing or destroying occupied bird nests. The overall amount of standing woody vegetation on the site would be reduced, thereby permanently reducing breeding, feeding, roosting and cover areas for some small mammals and birds. Some woody debris would be left in areas to support invertebrate and herptile cover.

Excavation would likely result in some mortality of small burrowing mammals, terrestrial invertebrates and possibly some amphibians and reptiles through crushing. Noise from equipment and workers would disrupt diurnal patterns of all species. It is expected that displaced species would recolonize the excavated areas when work is complete.

Positive impacts include increased diversity in native food plants for invertebrates, birds, and small mammals; and increased habitat for those species dependent on prairie systems for at least part of their

life cycle (i.e. ground-nesting bird species, burrowing mammals, reptiles using small mammal burrows). It is not anticipated that the suite of wildlife species using the site would change from the present.

According to the Biological Assessment to be submitted to the USFWS, the Oxbow West restoration activities would have the following effects to federally-listed species:

- Fender's blue butterfly - The proposed project would "May Affect, and Is Likely to Adversely Affect" the Fender's blue butterfly.

Mechanical treatments would cause some larval mortality in Fender's blue butterfly. All mechanical work including mowing would be timed and designed to minimize adverse effects to all life cycle stages of Fender's blue butterfly. Work would occur after breeding has ceased for the season, and only a limited number of skilled workers would be allowed to work near larval areas to minimize trampling.

Prescribed burns would occur after plants have set seed and after the butterfly breeding season is over. Mortality to Fender's blue butterfly larvae in burned areas is expected to be 100 percent.

The control and removal of invasive woody and herbaceous species to protect and expand the existing native prairie communities, re-invigoration of prairie species (including rare and listed species) by fire; protection (or maintenance) of the hydrologic regime for native wetland and upland prairie species on the site through the use of water control structures; and the expansion of native species by seeding or planting would all benefit the Fender's blue butterfly in the long term.

#### **AIR QUALITY/FUELS**

The site has fine fuels (vegetation) of approximately 1 to 1.5 tons per acre. Prescribed burning of the proposed Oxbow West restoration area would consume these fine fuels very quickly (rapid rate of ignition and spread) with a relatively short residence time and would be characterized as high fire intensity with low fire severity.

Air quality would be affected for a short period during burn operations. This impact would be no longer than 40 minutes for a 15-acre burn. Particulate matter emissions generated by a 15-acre burn at the Oxbow West site is estimated at 0.04 tons of particulate matter, 2.5 microns in diameter and 0.11 tons of particulate matter 10 microns in diameter. As a comparison a 15-acre slash burn would produce an estimated 4.5 ton of PM<sub>2.5</sub> and 4.9 tons of PM<sub>10</sub>. Some short term, localized degradation is expected during burns but smoke will be light and would quickly dissipate.

The burn areas would not exceed 15 acres per burn event, and all burns would comply with local and county burn ordinances. Fumes from heavy equipment burning fossil fuels may be detected by pedestrians on Terry Street or bike path users.

#### **RECREATION**

The effects to recreation from the proposed action would be minimal since visitors are not encouraged to visit this unit. Once the bicycle trail is built, some inconvenience due to smoke and/or possible trail usage delays during the burns may occur and would be a minor negative short term impact.

#### **HAZARDOUS MATERIALS**

Negative impacts are not expected. Excavation work would occur during the mid-late summer dry season when drainage ways on the site are not holding water. Installation of water control structures will be above the water level of Amazon Channel and may involve gasoline or diesel-powered equipment.

Mechanical invasive species treatments may involve small amounts of gasoline and motor oil, and any spill would be inland from waterways and would be small and containable. Spill containment kits would be available in the event of a spill, and removal, transport, and disposal would be done in accordance with the U.S. Environmental Protection Agency and Oregon Department of Environmental Quality laws and regulations.

## **C. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE B (NO ACTION ALTERNATIVE)**

### **SOILS**

#### Soil Compaction/Site Productivity: Soil Fertility/Plant Available Water

There would be no direct or indirect effects to soil compaction or soil fertility with the No Action alternative. In the absence of prescribed fire the gradual succession of the wetland and upland prairie vegetation to a condition more dominated by trees and shrubs would contribute to a gradual increase in the development of the surface litter layer of the soil from leaf fall, and downed wood.

#### Sedimentation

There would be no direct or indirect effects of Alternative B to sedimentation of streams.

#### Cumulative Effects

There would be no known cumulative effects to wetland soils with the Alternative B.

### **HYDROLOGY**

There would be no direct effects to the hydrologic regime of the site with the No Action, Alternative B. An existing north-south ditch located at the southwest portion of the site would not be converted into a shallow swale to facilitate drainage of high flows to the south end of the site and into the Amazon Channel and the proposed water control structures would not be installed along the Amazon Channel. Water levels on the Oxbow West site could not be adjusted if sheet flows increase and become detrimental to native plant communities when commercial development occurs on the privately-owned parcel adjacent to the west of the site.

### **VEGETATION**

Vegetation succession would be expected to continue, with most of the wetland and upland prairie eventually dominated by trees and shrubs such as hawthorne, Himalayan blackberry, and ash trees. Exotic and invasive species such as reed canary grass, pennyroyal, and teasel would continue to spread through native prairie communities, and it is expected that they would out-compete many of the native herbaceous species prior to woody succession.

The site would continue successional processes and eventually develop into a forested and scrub-shrub site. This would result in the loss of a remnant wet prairie, and the increase in forested acreage in the south Willamette Valley.

### **BOTANY-SPECIAL STATUS SPECIES**

#### Threatened and Endangered Species

The federally-listed as endangered Willamette daisy and the federally-listed as threatened Kincaid's lupine, would eventually disappear from this site, as both are dependent on open wet or upland prairies.

#### Species of Concern

The white top aster, Cusick's checker-mallow, and shaggy horkelia, which are listed through the Oregon Natural Heritage Program, would eventually disappear from this site, as all three are dependent on open wet or upland prairies.

#### Invasive Non-Native Species

Invasive non-native species would increase on the site, outcompeting native prairie species. They would also contribute to airborne, waterborne and animal transmission of invasive seed supplies offsite.

#### Wetlands

The composition of wetlands and uplands on the site would either remain the same or the amount of wetlands on the site could possibly increase with the potential increased flow from the adjacent private parcel when it is developed.

#### **WILDLIFE**

Some ground dwelling species and ground nesters would be displaced by species more frequently associated with woodlands.

#### Threatened and Endangered Species

As vegetation successional processes continue to a more forested and scrub-shrub site and as native prairie species are displaced, the current federally-listed species, Fender's blue butterfly would eventually disappear from this site.

#### **AIR QUALITY/FUELS**

Air quality would not be impacted. Vegetation succession would be expected to continue, with most of the wetland and upland prairie eventually dominated by trees and shrubs leading to a buildup of both live and dead fuels over time.

#### **RECREATION**

Under this action effects to recreation would be nonexistent. There would be no effect to bike trail usage once the bike trail is constructed.

#### **HAZARDOUS MATERIALS**

No hazardous materials would be present.

### **D. ENVIRONMENTAL CONSEQUENCES OF ALTERNATIVE C (MANAGEMENT WITHOUT PRESCRIBED FIRE )**

#### **SOILS**

The effects to soil resources would be similar to those described for the Proposed Action Alternative A except there would be no effects related to the occurrence of prescribed fire. In the absence of prescribed fire the gradual succession of the wetland and upland prairie vegetation to a condition more dominated by trees and shrubs would contribute to a gradual increase in the development of the surface litter layer of the soil from leaf fall, dead and decaying vegetation, and downed wood.

#### **HYDROLOGY**

The effects to hydrology would be the same as those described for the Proposed Action Alternative A.

## **VEGETATION**

The removal of a rotational cycle of prescribed burning would result in an increased thatch layer (buildup of dead and decaying vegetation on the soil surface). The thatch would increase shade for emerging prairie species and may result in selection of some species over others, thereby reducing the number of native species present. Mechanical removal of woody whips on a more frequent basis would be required, instead of using fire to kill them as they encroach on the prairie. Listed plant species would not be damaged by fire.

## **BOTANY-SPECIAL STATUS SPECIES**

### Threatened and Endangered Species

The presence of an increased thatch layer due to lack of burning would hinder the emergence of prairie species and may result in selection of some species over others, thereby reducing the number of native species present. The federally-listed as endangered Willamette daisy, and the federally-listed as threatened Kincaid's lupine, would be potentially reduced in number along with other native species due to a reduction or loss of open wet or upland prairie habitat.

Mechanical treatments (including mowing), hand removal, and solarization effects to these federally-listed species would be the same as the Proposed Action, Alternative A. Listed plant species would not be damaged by fire activities with this alternative.

### Species of Concern

An increased thatch layer due to lack of burning would increase shade for emerging prairie species and may result in selection of some species over others, thereby reducing the number of native species present. The white top aster, Cusick's checker-mallow, and shaggy horkelia, which are listed through the Oregon Natural Heritage Program, would be potentially reduced in number along with other native species.

Mechanical treatments (including mowing), hand removal, and solarization affects to these Species of Concern would be the same as the Proposed Action, Alternative A. There would be no effects related to prescribed burning

### Invasive Non-Native Species

Invasive non-native species would be controlled strictly through mechanical methods, hand removal, and solarization. The effects of these treatments to invasive non-natives are expected to be the same as under Alternative A. There would be no effects related to prescribed burning.

### Wetlands

The composition of wetlands and uplands on the site would remain the same.

## **WILDLIFE**

Alternative C would potentially result in a minor reduction in the variety of food sources for herbivores. No prescribed fire-induced mortality would occur for terrestrial invertebrates or other species not able to obtain adequate shelter during the burns.

### Threatened and Endangered Species

The elimination of prescribed burning as a management tool would negatively impact ongoing studies to determine the response of listed species to fire. The effect on the federally-listed species, Fender's blue butterfly is expected to be negative because historically fire was part of the cycle for native prairies in the southern Willamette Valley. Other management activities described above would focus on

protection, enhancement and monitoring of these species without prescribed burning, and would partially compensate for the lack of fire. Currently there is no effective technique other than prescribed burning to reduce the thatch area over large prairie expanses. No mortality to Fender's blue butterfly would occur as a result of prescribed burns since none would occur with this alternative.

#### **AIR QUALITY / FUELS**

Air quality would not be impacted with Alternative C. In the absence of prescribed fire the gradual succession of the wetland and upland prairie vegetation to a condition more dominated by trees and shrubs would contribute to a gradual increase in the development of the surface litter layer of the soil from leaf fall, dead and decaying vegetation, and downed wood leading to increased fuel loading. Mechanical removal of the woody whips may be required to reduce the potential increased fuel loading in the absence of prescribed fire.

#### **RECREATION**

Under this action effects to recreation would be nonexistent. Recreation would be concentrated along the new bicycle path without being affected by this proposal.

#### **HAZARDOUS MATERIALS**

Negative impacts are not expected, same as Alternative A. Spill containment kits would be available in the event of a spill, and removal, transport, and disposal would be done in accordance with the U.S. Environmental Protection Agency and Oregon Department of Environmental Quality laws and regulations.

### **V. CONSULTATION AND COORDINATION**

#### **A. SPECIALISTS CONTACTED FOR REVIEW, CONSULTATION AND COORDINATION INCLUDED:**

Mark Stephen	BLM Forest Ecologist (NEPA Review)
Dharmika Henshel	BLM Botanist
Jean Battle	BLM Natural Resource Specialist (Wildlife and Wetlands)
Karin Baitis	BLM Soil Scientist / Hydrology
Dave C. Reed	BLM Fuels Specialist
Mike Southard	BLM Cultural Resources
Saundra Miles	BLM Recreation
Gary Hoppe	BLM Planning and Environmental Coordination

#### **B. UNITED STATES FISH AND WILDLIFE SERVICE CONSULTATION**

A biological assessment was submitted on July 30<sup>th</sup> 2002 to the USFWS regarding the proximity of Willamette daisy, Kincaid's lupine, and Fender's blue butterfly populations to the proposed restoration activities at Oxbow West. All proposed work will be reviewed by USFWS during formal consultation as required under the Endangered Species Act. A Record of Decision will not be signed until a Biological Opinion from the USFWS is received. Any necessary terms and conditions required by the USFWS Biological Opinion would be followed.

According to the Biological Assessment to be submitted to the USFWS, the Oxbow West restoration activities would have the following effects to federally listed species:



- ▶ The proposed action would “May Affect, Likely to Adversely Affect” the federally-listed as endangered Willamette daisy and Fender’s blue butterfly.
- ▶ The proposed action would “May Affect, Not Likely to Adversely Affect” the federally-listed as threatened Kincaid’s lupine.

**C. STATE AGENCIES AND LOCAL GOVERNMENT OFFICES NOTIFIED AND THEIR COMMENTS REQUESTED:**

Oregon Department of Environmental Quality  
 Historic Preservation Office  
 Oregon Division of State Lands

**VI. REFERENCES**

- Alverson, E.R. 1993. Assessment of Proposed Wetland Mitigation Areas in West Eugene. Prepared for EPA. Lane Council of Governments.
- Balster, C.A. and R.B. Parsons. 1968. Geomorphology and Soils, Willamette Valley, Oregon. Special Report 265. Agricultural Experiment Station, OSU, Corvallis, Oregon.
- City of Eugene, 2000. West Eugene Wetlands Plan. City of Eugene and Lane Council of Governments, Eugene Oregon.
- Connelly, K. P. and J. B. Kauffman. 1991. Ecological effects of fire in Willamette Valley wetland prairies with special emphasis on *Lomatium bradshawii* and *Erigeron decumbens*, two rare endemic plants. Unpublished document of the Army Corps of Engineers.
- Dunne, K. P., Rodrigo, A. M., Samanns, E. (1998). "Engineering Specification Guidelines for Wetland Plant Establishment and Subgrade Preparation," Technical Report WRP-RE-19, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
- Finley, K. K. and J. B. Kauffman, 1992. Soils and hydrology of Willamette Valley wetland prairies and ecological response of *Lomatium bradshawii* and *Erigeron decumbens* var. *decumbens* to prescribed fire- a progress report. Unpublished document of the Bureau of Land Management.
- Frank, F.J. 1973. Ground Water in the Eugene-Springfield Area, Southern Willamette Valley, Oregon. Geological Survey Water-Supply Paper 2018. U.S. Govt Printing Office, Washington.
- Interagency Conservation Strategy for Rare Native Prairie species in West Eugene, 2000.
- Jackson, S. A. 1996. Reproductive Aspects of *Lomatium bradshawii* and *Erigeron decumbens* of the Willamette Valley, Oregon. Master’s thesis, University of Oregon, Eugene, Oregon.
- Kaye, T. N. Institute for Applied Ecology. 1999, 2000, 2001. Population Monitoring for proposed experimental habitat manipulation of Willamette Daisy Ox bow West Site, West Eugene.
- Kaye, T. N. Institute for Applied Ecology 1999, 2000, 2001. Population Monitoring for *Lupinus sulphureus*

ssp. *kincaidii*: Fir Butte and Oxbow West sites, West Eugene.

Kaye, T. N. Institute for Applied Ecology. 2002. Population Monitoring for *Lupinus sulphureus* ssp. *kincaidii*: Fir Butte and Oxbow West sites, West Eugene. Challenge Cost-Share reports for the Bureau of Land Management.

Ketcheson, G.L. and Megahan. 1996. Sediment Production and Downslope Sediment Transport from Forest Roads in Granitic Watersheds. Intermountain Research Station. Forest Service. Research Paper INT-RP-486.

Klock, G.O. and C.C. Grier. 1979. Effects of Fire on the Long-Term Maintenance of Forest Productivity. In: Gessel, S.P.; Kenady, R.M.; Atkinson, W.A., eds. Proceedings, forest fertilization conference; 1979 September 25-27; Union, WA. Contr. 40. Seattle, WA: u of WA, College of Forest Resources; 1979: 247-250.

Norris, L.A. 1990. An Overview and Synthesis of Knowledge Concerning Natural and Prescribed Fire in Pacific Northwest Forests. In: Natural and prescribed fire in Pacific Northwest forests. Walstad, J.D., ed, et al. Corvallis, OR: OSU Press, pp. 317.

Paton, T.R. 1974. Origin and Terminology for Gilgai in Australia. *Geoderma*, 11, pp. 221-242.

Pendergrass, K. L. 1995. *Vegetation Composition And Response To Fire Of Native Willamette Valley Wetland Prairies*. M.S. Thesis, Oregon State University, Corvallis, Oregon. pp. 32 and 46.

Power, W.E. 1987. TPCC Technical Guide. Bureau of Land Management, Salem, Oregon.

Retallack, G. 2001. Personal communication. University of Oregon Geology Department.

Salem District BLM. 1983. Draft Guidance and Study Results of Effects on Site Productivity from Fire.

Salix and Associates. 1996 and 1997. Lower Amazon Rare Plant Surveys.

SCS. 1972. Soil Survey of Marion County Area, Oregon. Soil Conservation Service.

SCS. 1974. Soil Survey of Yamhill County Area, Oregon. Soil Conservation Service.

SCS. 1982. Soil Survey of Polk County Area, Oregon. Soil Conservation Service.

SCS. 1987. Soil Survey of Linn County Area, Oregon. Soil Conservation Service.

SCS. 1987. Soil Survey of Lane County Area, Oregon. Soil Conservation Service.

Toepel, K.A. 1985. The Flanagan Site: 6,000 Years of Occupation in the Upper Willamette Valley, Oregon. A Dissertation. University of Oregon, Eugene, Oregon.

USDI, Bureau of Land Management. June 1995. *Eugene District Record of Decision and Resource Management Plan*. Eugene District Office, Eugene, Oregon.

USDI, Fish and Wildlife Service. 1999. Conference Opinion. Ref. 1-7-99-C-464.

U.S.G.S. 1969. Mineral and Water Resources of Oregon. State of Oregon Department of Geology and Mineral

Industries. Bulletin 64.

U.S.G.S. 1973. Geologic Map of the Eugene-Springfield Area, Southern Willamette Valley, Oregon. Water-Supply Paper 2018.

Walker, GW, Macleod N S. 1991. Geologic Map of Oregon. U.S.G.S.

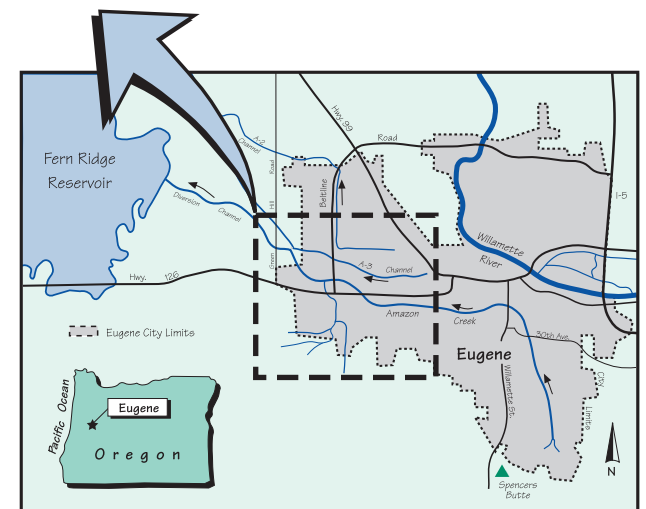
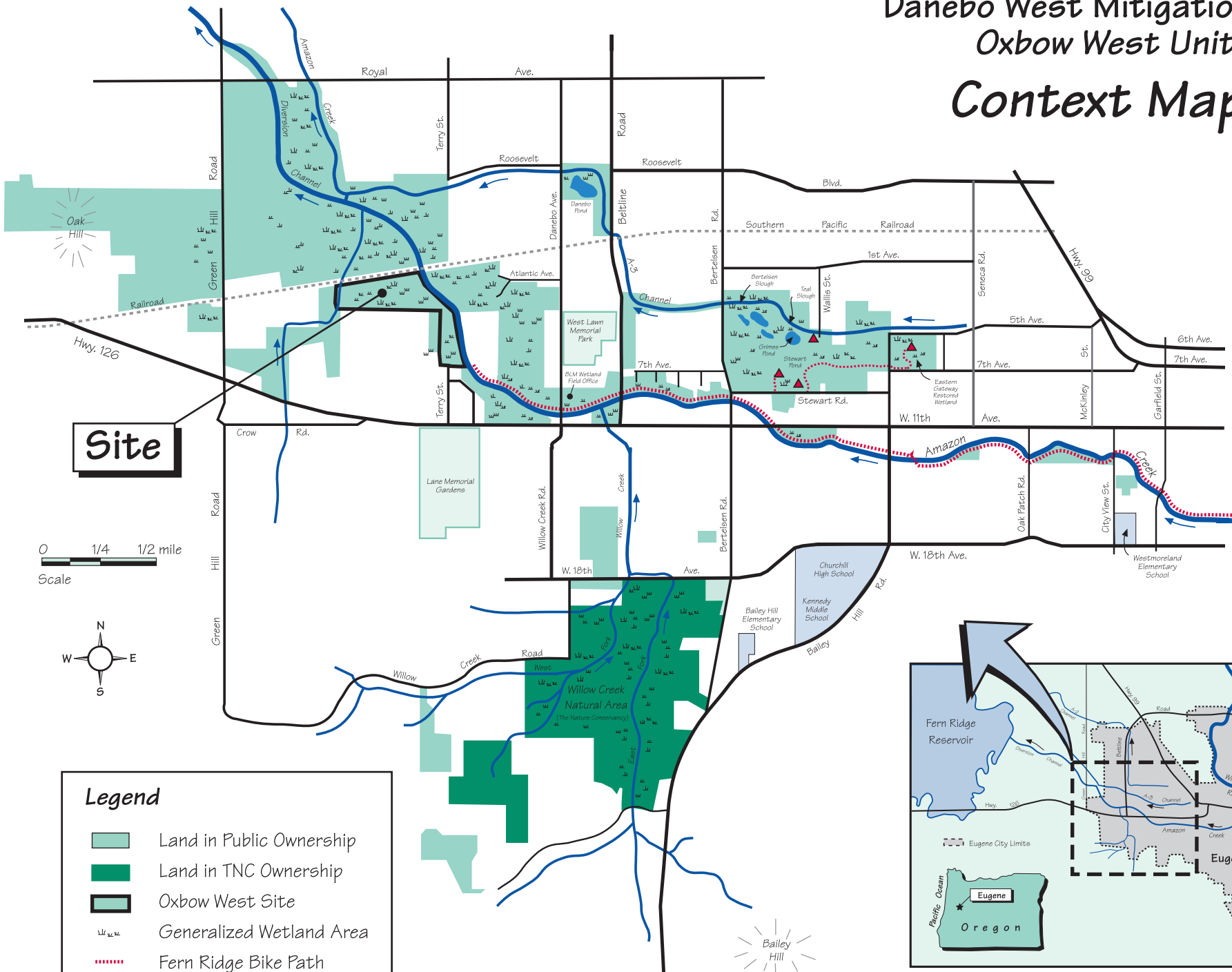
Weber, Marian. 1998. West Danebo Wetland Restoration Rare, Threatened, and Endangered Plant Survey.

Wilson, M. V. 2002. Presentation at February 25, 2002, Current Research and Monitoring on Threatened and Endangered Species Meeting. Salem, Oregon.

Wilson, M. V., and D. L. Clark. 2000. Restoration of Fender's blue butterfly and its prairie ecosystem: Management applications of fire to Baskett Slough NWR.

Wilson, M. V., and D. L. Clark. 1997. Effects of fire and mowing on native upland prairie and a rare butterfly in western Oregon at Baskett Butte.

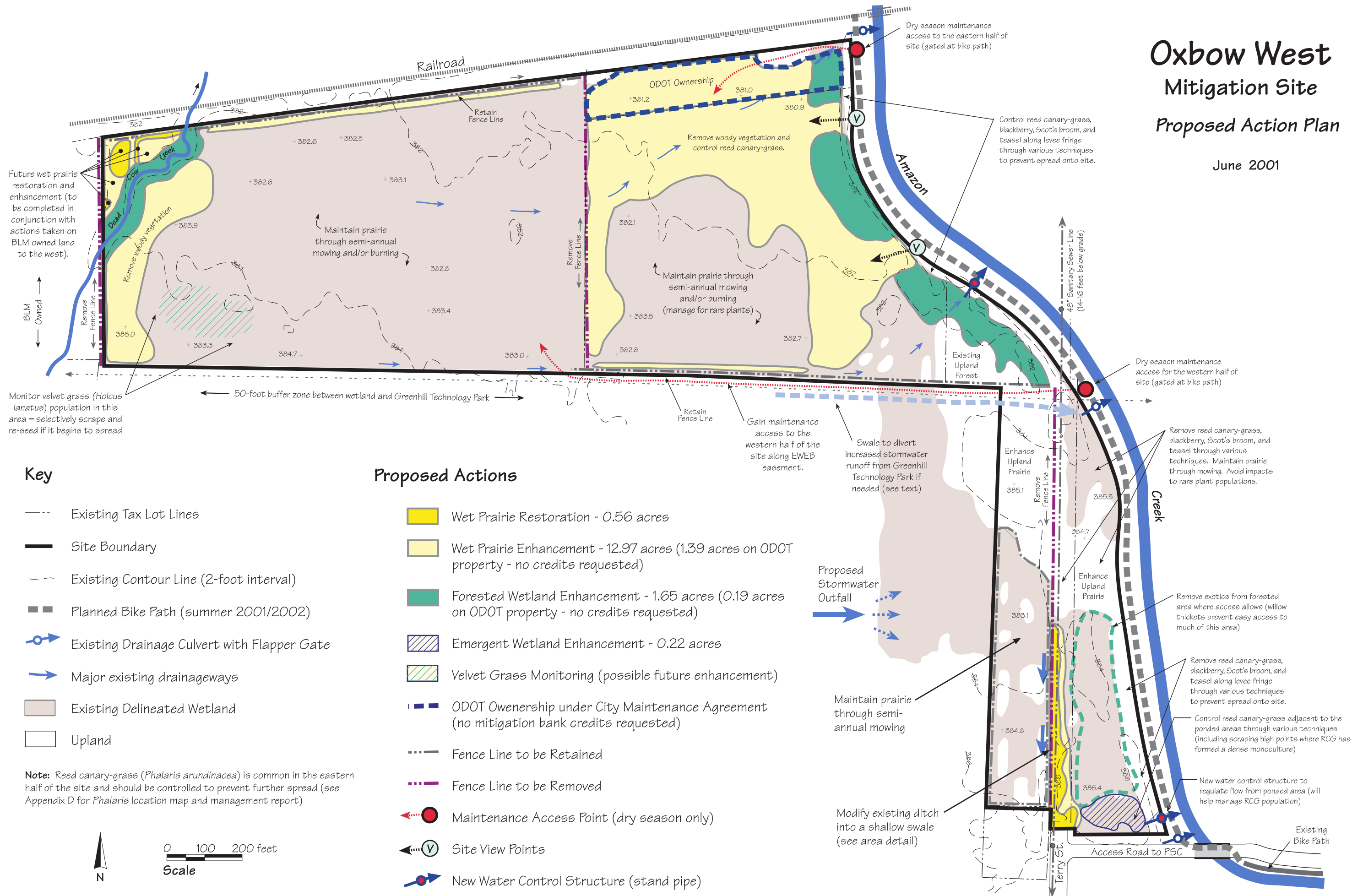
# Danebo West Mitigation Site Oxbow West Unit Context Map



# Oxbow West Mitigation Site

## Proposed Action Plan

June 2001



**UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
EUGENE DISTRICT OFFICE**

Preliminary  
Finding of No Significant Impact  
for the  
West Eugene Wetlands Project, Oxbow West Management Unit

Determination:

On the basis of the information contained in the Environmental Assessment, and all other information available to me, it is my determination that implementation of the proposed action or alternatives will not have significant environmental impacts beyond those already addressed in the *Eugene District Record of Decision and Resource Management Plan* (June 1995) with which this EA is in conformance, and does not, in and of itself, constitute a major federal action having a significant effect on the human environment. Therefore, an environmental impact statement or a supplement to the existing environmental impact statement is not necessary and will not be prepared.